

*If you are using a printed copy of this procedure, and not the on-screen version, then you **MUST** make sure the dates at the bottom of the printed copy and the on-screen version match.
The on-screen version of the Collider-Accelerator Department Procedure is the Official Version.
Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A.*

C-A OPERATIONS PROCEDURES MANUAL

3.17 Emergency Procedures for the STAR Detector and the 1006 Complex

Text Pages 2 through 7

Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Approved: _____ ***Signature on File*** _____
Collider-Accelerator Department Chairman Date

W. Christie

3.17 Experimenters Emergency Procedures for the Star Detector and the 1006 Complex

1. Purpose

The purpose of this document is to define the local emergency plan for operations of the STAR detector system. This local emergency plan will help to ensure:

- Safety and well-being of personnel.
- Implementation of the appropriate emergency procedures contained in [C-A-OPM-3.0](#) and section [5.0](#) of this document.
- Prompt notification of appropriate personnel.
- Maintenance of appropriate C-A emergency status.
- Protection of the environment.
- Preservation of BNL facilities and equipment.

2. Responsibilities

2.1 During the testing, commissioning, and operations of the STAR detector system the Local Emergency Coordinator (LEC) will be the C-A Collider-Accelerator Support (CAS) Watch. The responsibilities of the LEC are described in [C-A-OPM 3.2](#).

2.1.1 The LEC is responsible for being aware of the Shift Leader responsibilities described in Section 2.2.

2.2 The Shift Leader, or designee, or the Building Manager shall be responsible for:

2.2.1 Acting as a First Responder to incidents and responding to the Command Post.

2.2.2 Assisting the LEC in maintaining the STAR detector and facility area in a safe condition.

2.2.3. Ensuring that personnel involved in STAR operations are trained in all Emergency and Safety procedures.

2.2.4 Posting any special instructions as required.

2.2.5 Carrying out any emergency actions, as prescribed in the section 5 of this document, or as directed by the Department Emergency Coordinator (DEC), LEC, or Incident Commander.

3. Prerequisites

3.1 The Shift Leader, or designee, shall have training in the following:

3.1.1 Local Emergency Plan, [C-A-OPM 3.0](#), including familiarity with SBMS Emergency Preparedness.

- 3.1.2 All relevant equipment involved in the STAR systems being used, to ensure safe operations.
- 3.1.3 Knowledge of the geographical layout of the RHIC 1006 complex (routes of egress, location of emergency equipment, phones and controls, etc.).

4. Precautions

- 4.1 The safety of personnel is of primary importance. In an emergency, all personnel shall take great care not to give instructions or information which might place personnel at risk of physical harm.
- 4.2 Access to buildings during an emergency alarm or situation is controlled by the Incident Commander. Access to equipment specified in this procedure may or may not be allowed depending on incident conditions.

5. Procedures

- 5.1 In the event that a fire alarm goes off in the 1006 complex, and it is not immediately clear that there is an actual fire:
 - 5.1.1 All personnel, except the LEC and/or Shift Leader, shall evacuate the Assembly Building and the Wide Angle Hall, proceed to the assembly point, and await the arrival of the Fire/Rescue Group.
 - 5.1.2 With the exception of the Shift Leader and cognizant persons designated by the Shift Leader, all personnel in the Data Acquisition room, the Control Room, and the Counting House (trailer) shall likewise evacuate these areas, proceed to the assembly point, and await the arrival of the Fire/Rescue Group.
 - 5.1.3 The LEC and Shift Leader shall report to the Command Post upon arrival of the Fire/Rescue Captain.
 - 5.1.4 If it is subsequently determined that there is a fire in the Assembly Building or the Wide Angle Hall, the methane bottles on the gas pad outside of the Assembly Building shall be closed. If possible, without putting personnel in danger or entering the building without permission from the Fire Captain, the gas system power should be turned off at the gas system power distribution panel (indicated on the layout of the STAR site, [C-A-OPM-ATT 3.17.a](#)).
- 5.2 In the event that there is an actual fire in the STAR Complex (in order of priority):

- 5.2.1 Pull the nearest fire alarm box if the alarm bells are not already sounding, and then call 911 or 2222.
- 5.2.2 Ensure that all personnel, except the LEC and/or Shift Leader, are evacuated from the Assembly Building and Wide Angle Hall (WAH), and that they proceed to the assembly area.
- 5.2.3 If the fire is in the building where the STAR detector currently resides, remove the AC power from the STAR detector. This is accomplished by pushing the “STAR CRASH” button, which resides just above the STAR Global Interlocks control screen in the DAQ room (top of rack DC5). Pushing the STAR CRASH causes the A11 and A12 circuit breakers in panel A1 in the DAQ room to trip to off, it causes the circuit breaker supplying AC power to the Photon Multiplicity Detector (PMD) to trip off, and it causes the STAR magnet power supplies to start a two minute ramp down of their currents.
- 5.2.4 Ensure that all personnel, except the LEC and/or Shift Leader, are evacuated from the DAQ room, Control Room, and the Counting House (trailer) and that they proceed to the assembly area.
- 5.2.5 If possible, without putting personnel in danger and with permission from the Incident Commander, the gas system power shall be turned off at the gas system power distribution panel (indicated on the layout of the STAR site, [C-A-OPM-ATT 3.17.a](#)).
- 5.2.6 Close the valves on the methane bottles located on the gas pad outside of the Assembly Building.
- 5.3 In the event that there is a Flammable gas alarm from the Detector, the STAR Global Interlock System shall place the detector in a safe mode and cognizant personnel shall respond to the emergency by:
 - 5.3.1 Pull the nearest fire alarm if the alarm bells are not already sounding.
 - 5.3.2 Ensure that all personnel are evacuated from the building where the detector resides (either the Assembly Building or the Wide Angle Hall), and that they proceed to the assembly point.

- 5.3.3 Remove the AC power from the STAR detector. This is accomplished by pushing the “STAR CRASH” button, which resides just above the STAR Global Interlocks control screen in the DAQ room (top of rack DC5). Pushing the STAR CRASH causes the A11 and A12 circuit breakers in panel A1 in the DAQ room to trip to off, it causes the circuit breaker supplying AC power to the Photon Multiplicity Detector (PMD) to trip off, and it causes the STAR magnet power supplies to start a two minute ramp down of their currents.
- 5.3.4 Ensure that the WAH emergency ventilation fans are on. This can be accomplished by turning the WAH ventilation fan switch to ON ([C-A-OPM-ATT 3.17.a](#)).
- 5.3.5 Ensure that the Time Projection Chamber (TPC) gas system has gone to purge mode. This can be accomplished by placing circuit breaker 3 in the TPC GAS SYSTEM POWER panel to OFF ([C-A-OPM-ATT 3.17.a](#)), or by pushing the button labeled “Gas System OFF” on the TPC Interlock System control/alarm panel (see [C-A-OPM-ATT 3.17.a](#)).
- 5.3.6 Contact a gas system expert from list ([C-A-OPM-ATT 3.17.b](#)).
- 5.4 In the event that the Oxygen Deficiency Hazard (ODH) alarm goes off in the gas mixing room (intermittent audible alarm and flashing blue light on panel in the gas mixing room), the emergency response is:
 - 5.4.1 Without entering the gas mixing room, open the door between the gas mixing room and the Assembly Building and leave it in the open position.
 - 5.4.2 Turn off the AC power to rack 2 of the TPC gas system by placing circuit breaker number 3, in the TPC GAS SYSTEM POWER panel, to the OFF position (see Attachment 1).
 - 5.4.3 Without going through the gas mixing room, walk around to the door between the gas mixing room and the outside. Open this door and prop it open.
 - 5.4.4 Turn off the Nitrogen gas line that supplies gas to the gas mixing room. This is accomplished by closing valve MV66, which is mounted on the metal wall just outside of the external door to the gas mixing room (see [C-A-OPM 3.17.a](#)).
- 5.5 In the event that a High Pressure gas line ruptures, the emergency response is to:
 - 5.5.1 If possible, quickly determine which of the high pressure gas lines has ruptured (Methane, Argon, or Nitrogen) and close the valve on the

appropriate bottle(s) or dewar(s) located on the gas pad outside of the Assembly Building. If it is not possible to quickly determine which gas line has ruptured turn off the valves on all of the bottles and dewars (Methane, Argon, and Nitrogen) located on the gas pad outside of the Assembly Building.

- 5.5.2 Contact a gas system expert from list ([C-A-OPM-ATT 3.17.b](#)).

- 5.6 In the event that there is a general gas system alarm:
- 5.6.1 Silence the alarm, if desired, by pushing the labeled TPC alarm silence button, which is located on TPC rack number 4 in the gas mixing room.
 - 5.6.2 Contact a gas system expert (names and contact information posted in the gas mixing room and in [C-A-OPM-ATT 3.17.b](#)). The expert will provide information on the cause/source of the alarm and provide instructions on what actions should be taken.
- 5.7 In the event of a power failure or an action by the STAR Global Interlock System (SGIS) which de-energizes the gas system:
- 5.7.1 The system will automatically go into a safe mode.
 - 5.7.2 Contact a gas system expert (from call list, posted in the gas mixing room and in [C-A-OPM-ATT 3.17.b](#)) and inform them.

6. Documentation

None

7. References

- 7.1 [C-A-OPM 3.0, "Local Emergency Plan"](#)

8. Attachments

- 8.1 [C-A-OPM-ATT 3.17.a "Layout of STAR Site Indicating"](#)
- Fire Alarms
 - Telephones
 - Gas Pad
 - Emergency Assembly Area (Indoor Assembly Area) (Counting House/Trailer)
 - Evacuation Area (Outdoor Assembly Area)
 - Shelter-in-place Area (Counting House/Trailer)
 - Detector Power Distribution (A1) Panel
 - Gas System Power Distribution Panel
 - Nitrogen Supply Valve (Mv66)
 - Wide Angle Hall Emergency Ventilation Fan Switch
 - Magnet Crash Button (In Power Supply Room)
 - Gas System Alarm Panel and Interlock Panel
- 8.2 [C-A-OPM-ATT 3.17.b "Call Down List for Alarm Response at the Star Facility"](#).